

## PERIODONTAL DNA CHANGES UNDER THE INFLUENCE OF $Cr^{6+}$ , STUDY BY INFRARED SPECTROPHOTOMETRY

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The infrared spectroscopy is widely used for gathering structural information on biological systems, but not used in periodontitis researchers. The study of DNA by infrared spectroscopy requires peeled DNA samples. The infrared spectra of DNA show many characteristic: denaturation, alkylation, dehydration and conformational transition.

Further studies of DNA by infrared spectroscopy are needed to determine the functional relevance of these alterations and the accomplishment of epigenetic investigations could have a future impact on diagnostic and/or therapeutic tools in treating periodontitis

**Object:** The object of this study was to analyze changes in the DNA in rats periodontal tissue under the influence of ions  $Cr^{6+}$ .

**Methods:** Animals of experimental group – 15 individuals entered potassium bichromate into drinking water in a dose of 0.02 mol/l. To rats of control group (5 individuals) drank usual drinking water. On five animals from under skilled group brought out of experiment in 20, 40 and 60 days after the beginning of introduction of bichromate of potassium. The resulting DNA product was triturated with and embedded in KBr tablet subsequent FTIR spectrophotometer Spectrum One (Perkin Elmer).

**Results.** Guanine-cytosine band vibration 1524 at 20 days was characterized by the decrease of infrared absorption  $1.03 \pm 0.36 \%$  ( $p < 0.025$ ). The band in 1555 was stable proportion of infrared absorption  $1.06 \pm 0.34\%$  ( $P > 0.05$ ). On 40 day the infrared absorption band of 1524 was unchanged percentage of  $1.01 \pm 0.45\%$  ( $P > 0.05$ ). Percentage of infrared absorption band of guanine 1555 is  $0.905 \pm 0.31\%$  ( $P < 0.09$ ). Characteristic changes come into effect on the 60 day observation. In the infrared absorption band of cytosine –1524 there was a decrease  $0.875 \pm 0.481 \%$  ( $P > 0.05$ ). In the infrared band of guanine 1555 fell absorption was  $0.9 \pm 0.09 \%$ . As these bands have a 60 day change, we suppose interoperability of chromium ions with guanine-cytosine base and as a consequence the occurrence DNA strand breaks.

**Conclusions.** The reaction of the chromium ions occurs on the surface of the DNA residue of phosphoric acid and nitrogenous bases with amino groups. The main damaging effect of chromium is the interaction with guanine-cytosine-rich regions of DNA, and as a consequence in violation of genetic information.